

What is claimed is:

1. Organic-inorganic hybrid polymer materials with compositional gradient composed of an organic polymer component and a metal oxide component which are covalently  
5 bonded each other, characterized in that concentration of the organic polymer component, or of the metal oxide component is increased or decreased in the direction of thickness of the material.

2. Organic-inorganic hybrid polymer materials with  
10 compositional gradient composed of an organic polymer component and a metal oxide component which are covalently bonded each other, characterized in that concentration of the organic polymer component is increased or decreased in the direction of thickness of the material.

15 3. Organic-inorganic hybrid polymer materials with compositional gradient composed of an organic polymer component and a metal oxide component which are covalently bonded each other, characterized in that concentration of the metal oxide component is increased or decreased in the  
20 direction of thickness of the material.

4. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the organic polymer has at least one functional group selected from the group composed of an  
25 alkoxymetal group, a hydroxyl group, an amino group, and a

carboxyl group.

- 5        5. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the organic polymer has at least one alkoxy metal group as a functional group.

6. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the organic polymer has a number average molecular weight of from 2000 to 10000 measured by GPC.

- 10       7. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the organic polymer comprises a thermoplastic resin as a main chain.

- 15       8. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the organic polymer comprises polycarbonate or polyarylate as a main chain.

- 20       9. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein the metal oxide is obtained by hydrolyzing and polycondensing a metal alkoxide compound or the low condensate thereof.

- 25       10. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein a metal element of the metal oxide

component is at least one selected from the group composed of Si, Ti, and Zr.

11. The organic-inorganic hybrid polymer materials with compositional gradient according to any one of claims 1 to 3, wherein a metal element of the metal oxide component is Si.